Transmission Services Liaison Group
Update for RRG Conference Call
August 31, 2004

Notice

The following update is a brief report on TSLG's work in progress. It is provided solely for informational purposes to communicate the general nature of the discussion in the view of the author. This update does not necessarily represent the position of any individual participant or the position of the group as a whole. In addition, because this is a work in progress, different views and positions may be developed in subsequent discussions.

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1. General Report.

a. A Conceptual Framework has been developed which when completed will:

- Lay out assumptions;
- Enumerate the services to be provided by Grid West, i.e.,
  - Region-wide services (e.g. reconfiguration) and
  - Consolidated control area services (e.g. real-time balancing market);
- Define the entities involved in Grid West operations or using Grid West services; and
- Describe relationships and contact points between these entities.

b. Module 2 – Transmission Rights Administration has been the major focus of work in the past month.

- Injection-Withdrawal Rights (IWRs):
  - Provide the right to schedule injections and withdrawals at specified points in the Grid West managed transmission system;
  - Will be tradable between parties;
  - Will be granted to parties who fund capacity expansions in the future;
  - Long term requests for available capacity to be included in the Capacity Expansion Service.
- Transmission Right Reconfiguration Services (RCS). A proposal has been developed for a set of auctions, which will enable transmission right trading prior to day-ahead scheduling.
- Day-Ahead Redispatch Service (RDS).

- This has proven to be the most challenging issue within Module 2, and led to the development of a series of implementation steps for building up all of the Beginning State functions.
- Day-ahead redispatch would be the last Beginning State function introduced, with the previous functions providing the foundational basis for final design of the redispatch function.

c. Module 3 – Scheduling, Operations and Settlement.

- Initial discussions of alternatives for scheduling have occurred. A revised proposal (based on the redispatch timing discussed below) will be covered at the next TSLG Meeting.
- Settlement issues will be addressed in September.

d. Module 4 – Ancillary Services.

- The focus for work on Module 4 is related to services to be provided by Grid West to a consolidated control area:
  - An ancillary services market, and
  - An energy balancing market.
- Reserves Market.
  - Consolidating parties must submit a supply offer at least equal to their allocated share of the consolidated control area's reserve requirements.
  - If they are willing to share in the cost of the market and abide by its rules, other Market Participants may make offers into the reserve market.
  - Grid West will purchase the most cost-effective set of reserves for the consolidated control area from all available offers, regardless of the supplier.
- Balancing Energy Market.
  - An initial design proposal will be addressed during September.

e. Cost Estimates from Module 5.

- A cost driver assessment was presented at the last RRG conference call. Slides are available on the website. (http://www.rtowest.com/Doc/TSLGCost_Drivers_Slides_4Aug2004.pdf)
- A report on the key cost components will be provided at the end of September. This will NOT be a cost estimate, but will indicate the tendency of the Grid West design toward high or low costs for each component, based on the range of costs experienced by other centralized transmission operations.
- A full, design-driven cost estimate will be prepared as the end of the next round of more detailed design work.

2. Reconfiguration Services (RCS).

a. Reconfiguration Services (RCS) will facilitate transmission rights trading.

- Parties holding rights can release them for sale by offering into the RCS.
- IWRs, limited by Available Flowgate Capacity (AFC), will also be available for sale.
- Parties wanting rights may bid to purchase specified IWRs.
- RCS will enable centralized trading of transmission rights where a simple bilateral, one-to-one match of injection and withdrawal points does not exist between buyers and sellers.
- Parties will still be able to make bilateral trades of transmission rights without using RCS.

b. Reconfiguration Implementation:

- Annual Auction – Held 2 months or so before beginning of cycle year (that could be either a water-year or a calendar-year cycle), offering on-peak and off-peak services for twelve months;
- Monthly Auctions – Held a week prior to the beginning of calendar month allowing trading for that calendar month and all other months in the balance of the year, offering monthly on-peak and off-peak services for each available month;
- Intra-month Auctions – Held two days prior to the operating day (the day-before-day-ahead), offering daily on-peak and off-peak services for the balance of the month;
- Bids and offers can be made in each auction for any or all of the associated period being traded.

c. Availability of IWRs will be based on:

- Honoring pre-existing transmission rights.
- Recognizing a portion of the netting potential of existing transmission rights using an “x-factor” when building the transmission rights base case.
  - The “x-factor” is used to acknowledge simultaneous flow effects and diversity of use that in practice reduce actual flows below the sum of all rights today, where the sum of all rights without any netting would indicate that the transmission system is overcommitted.
  - The “x-factor” can be adjusted by flowgate for seasonal patterns, historic experience, physical dispatch limitations and risk tolerance.

- The risk issues that arise from use of "x-factor", such as potential over commitment of the network or its opposite underutilization, will have to be addressed in future work.

3. Redispatch Service (RDS).

a. Background.

- In the Module 1 Report, ;a Regional Network Service is described which has three components:
  - Capacity Expansion Service.
  - Reconfiguration Service; and
  - Redispatch Service with voluntary inc/dec bids used to obtain a degree of optimization in transmission usage as part of the day-ahead scheduling process.
- The Structure Group provided TSLG with a proposal for implementing the Redispatch Market that had the following features:
  - Voluntary inc/dec bids would be received.
  - If parties had unused transmission rights (which they did not offer or did not sell in the last daily reconfiguration auction) they could also be offered along with the inc/dec bids.
  - Grid West would perform a security constrained dispatch using the inc/dec bids and any transmission released to enable centralized trades among the parties submitting inc/dec bids.
  - If released transmission capacity was acquired to enable these trades, the parties releasing rights would be paid, as they are in the reconfiguration auctions.
  - Because retained transmission rights may well be used after real-time, AFC must be held back to honor those existing rights.
- At the TSLG meetings held, August 10-11, 2004, the group's discussion uncovered a major problem with the proposed day-ahead redispatch market, so Structure was asked to suggest possible options for dealing with the issues raised.
- On August 24, 2004, TSLG again discussed the Redispatch Service and discussed the optional approaches suggested by the Structure Group.

b. Challenges posed by the Redispatch Service.

- Because only those who participate in the market are financially bound to its results, other parties may change their schedules between day-ahead and real-time. This has several consequences:
  - Otherwise available capacity must be withheld from use to cover the potential actions of parties who retain their rights;

- Even with allowances for retained rights, transactions which are feasible based on usage assumptions, could become infeasible depending on the schedule changes made by parties whose IWR usage was not committed by the Redispatch Service because they chose not to participate;
- Grid West's estimate of potential uses can help, but risk is inherent in such judgment and may force curtailments in real-time or impose redispatch costs to be recovered from users.

o Determining settlement of generation performance can be problematic, for example:

- Is an accepted inc/dec bid measure against incremental generation, or the scheduled unit set-point?
  - If the scheduled set-point is used, then parties may be reluctant to bid if their generation can no longer follow their load.
  - If the incremental generation is used, the base schedule of generation could be used to create congestion that a decremental bid might offer to relieve. However, if the base-scheduled generation was not actually intended to run in real-time the decremental sale would be made to reduce congestion that would never have actually occurred. In California this has been called the "dec game" and results in uplift costs to all market participants. This and other types of gaming or "creating phantom congestion" constitute a potential abuse of the day-ahead redispatch market.
  - Why doesn't this happen today?
    - There is no day-ahead settlement today, so there is no mechanism to monetize potential congestion (that is being paid to redispatch to clear expected congestion).
  - How is this problem addressed in other day-ahead markets?
    - Day-ahead and real-time settlements are tied together, so parties who change schedules after day-ahead pay the consequences.
    - Performance is also measured against all activities (changes in all generation and load) in the market.

- What real-time price is any mismatch in performance charged/paid?
  - If the generator is located outside of the consolidated control area is it the OATT balancing charge (potentially with penalties)?
- The day-ahead dispatch must be based on generator location, but if the generation is coming from another control area and net interchange is used as the basis of performance, what are the consequences of the supplying control area switching generation location?
  - Is day-ahead redispatch really feasible under these conditions?
  - Can the supplying control area make such changes without consultation?
- It appears that the partial nature of the originally proposed redispatch service is what creates the potential for paying for performance that is not delivered, and brings into question the practicality of any such market that does not involve settlement for all injections and withdrawals associated with the market.

c. Consideration of Options.
   - Four options were discussed for implementing Redispatch Service:
     - Option A – Reconfiguration two days-ahead and day-ahead redispatch as originally proposed.
     - Option B – Reconfiguration two days-ahead, day-ahead redispatch and an additional redispatch Z minutes before the operating hour T ("T-Z" redispatch).
     - Option C – Reconfiguration day-ahead and a "T-Z" redispatch.
     - Option D – Reconfiguration day-ahead and a real-time balancing redispatch within the consolidated control area.
   - Discussion of Options:
     - Option B reduces some uncertainty by adding a "T-Z" redispatch closer to real-time:
       - Parties may be more willing to surrender scheduling flexibility at that time.
       - However, a "T-Z" market would be quite expensive to operate compared to the day-ahead market, because it requires 24 settlements a day, 7 days a week.
       - As a result, this option isn't attractive. It doesn't add certainty day-ahead and it does adds costs.
     - Option C provides more certainty, but still has some of the residual settlement problems of the day-ahead and the large costs of 24x7 settlements.
     - Option D – Doesn't provide region-wide redispatch day-ahead, so it would make less use of transmission capacity than the Regional Proposal envisioned. However, the issues above must be resolved before a day-ahead Redispatch Service can be implemented.

d. Proposed Approach – Steps to Beginning State Implementation.

- The Proposal. After a period of debate, TSLG considered the possibility of addressing the redispatch issues through a staged implementation of the features of the Beginning State model. Going "live" with all the Beginning State features at the same time is probably impractical and unwise. Initiating one feature followed by another when the first is already working well has proven to be a successful strategy elsewhere. With that in mind, TSLG developed a set of sequential steps for implementing the Beginning State. The primary scope of each of the proposed steps is indicated by "*GFW"* for activities that cover the Grid West footprint and "*CCA"* for activities that are within the consolidated control area operated by Grid West.
  - *Step 1 – Grid West created (GWF)*
    - An independent entity with regionally responsive governance.
    - Regional planning initiated.
  - *Step 2 – Grid West initiates centralized scheduling and transmission rights administration. (GWF)*
    - Injection-withdrawal rights administered using a flow based determination of available flowgate capacity (AFC) for all of Grid West.
    - Capacity Expansion Service initiated (with provisions for dealing with long term requests).
    - Operational relationship established with Reliability Coordinator (PNSC) to share scheduling data and coordinate operational plans.
    - Changes underway in WECC (such as the development of the Western Interchange Tool or WIT) will be incorporated and may reduce the cost of Grid West's implementation.
  - *Step 3 – Grid West offers Reconfiguration Service (GWF)*
    - Annual auction
    - Monthly auctions
    - Intra-month auctions (close in time to day-ahead scheduling)
  - *Step 4 – Grid West initiates real-time markets (CCA)*
    - Balancing Market – inc/dec bids with security constrained dispatch optimization.
    - Reserve Market – Voluntary participation by Grid West and non-Grid West entities).
  - *Step 5 – Grid West offers day-ahead redispatch (energy) market*
    - Redispatch will operate in a manner that is consistent with the exercise of existing contract rights.
    - Inc/dec bids provided with day-ahead schedules.

- Redispatch includes simultaneous release of rights by sellers (as in the reconfiguration markets).
- Provisions for settlement and determining performance against commitments made.

e. Proposal Discussion:

- Steps 1-4 taken together approximate Option D, while adding Step 5 is the equivalent of Option A. Not all the steps must be taken in sequence. For instance, the planning of Step 1 along with Steps 2 and 3 could be implemented at the same time. The timing of Step 4 is also somewhat independent of Steps 2 and 3 and can be driven by the schedule of the consolidating parties.
- In addition to being a practical approach to market initiation, the stepwise or staged approach allows the redispatch issues to be resolved over time.
  - More attention can be focused on the details of the earlier steps now.
  - Experience with earlier markets (reconfiguration, balancing and reserves) will provide guidance for later day-ahead redispatch market design.
  - The presence of a functioning balancing market,that produces transparent locational prices, will provide a quantitative basis for evaluating the potential problems of the redispatch market.
  - It will be easier to determine whether a day-ahead market or a "T-Z" market or both are needed once actual price data and congestion valuation are available.